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National Coral Reef Management Fellows Newsletter

In this issue:

The Fellow Newsletter is published by the National Oceanic and Atmospheric Administration (NOAA) Coral Reef Conservation Program, the United States Department of the Interior, and Nova Southeastern University to relay information related to the fellowship program.

Meet the Fellows!

Victoria Barker (Florida - Key West) grew up in landlocked Ohio but has spent the last few years chasing the ocean in both the Caribbean and South Pacific. She has an academic background in fisheries science, but in the last few years has shifted her focus towards coral reef ecosystem management. She now assists in coordinating the stony coral tissue loss disease response efforts in Florida. Her favorite ocean memory was night diving in Bonaire to see the ostracods mate. These little crustaceans come out at the full moon to reproduce and find each other in the dark ocean by sending out little trails of light. Diving with ostracods was like swimming through a sea of shooting stars!

Ilan Bubb (Commonwealth of the Northern Mariana Islands - Saipan) might have been born and raised in Florida, but he didn't start out life with a deep love of the ocean. In fact, as a child, he hated sand so much that he avoided going to the beach. It wasn't until he was 10 years old, that Ilan truly came to appreciate the beauty of the water on a scalloping trip to the seagrass meadows. Now, he loves to snorkel and dive but is also an avid outdoorsman, having hiked both the Appalachian and Colorado Trails. During his Fellowship, Ilan is developing a fire management plan for the island of Saipan in order to stymie erosion into and sedimentation of coral reefs.

Justin Cruz-Leduc (Puerto Rico) is originally from Puerto Rico. After a brief hiatus to attend graduate school on the mainland, he is back, focusing on the reefs he grew up on. After reading research papers in college about how coral bleaching had wiped out so many reefs in the Caribbean, he decided that maybe marine science was not the career for him. Then he took a Coral Reef Ecology class, during which he took a three-week trip to visit Dayang Island on the east side of Johor Bahru, Malaysia. During that trip, he decided this was definitely the job for him after all. Justin will be using his background and skills to gather more comprehensive data on the local distribution and abundance of coral diseases. He will later use this data to produce a set of recommendations that can be used to create coral disease management strategies.

Matt Davies (US Virgin Islands - St. Croix) was born and raised in Caerphilly, Wales and has participated in a wide variety of marine conservation projects around the world. The experience that began his career in marine conservation came in 2008, when he volunteered in Tanzania. He spent three months surveying the rubble of a reef that had been destroyed by years of dynamite fishing. The difference between the damaged reef and a nearby marine protected area was staggering. When he returned the United Kingdom, he promptly transferred from Electrical Engineering to the Biological Sciences. During his Fellowship, he is working on developing a vessel grounding response plan and safe boating initiative for the territory, as well as coordinating the St. Croix Stony Coral Tissue Loss Disease Strike Team and a variety of citizen science programs.

Cara Lin (Guam) is originally from New York state. She became interested in marine biology after learning that many animals in the ocean (including sessile ones like coral) begin as swimming planktonic larvae. While observing snail larvae under a microscope, she realized the impressive interconnectivity of the marine microscopic world and how viruses, bacteria, and plankton are often overlooked but critical parts of the marine ecosystem. All of that practice researching interconnectivity will be a great help in her Fellowship project, in which she is assessing the historical changes that have occurred in the seagrass and mangrove communities surrounding the island of Guam.

Valentine Vaeoso (American Samoa - Pago Pago), a native of American Samoa, has always loved being around the water. After attending the University of Hawaii - Hilo, she returned to the islands and is now working for the Coral Reef Advisory Group, part of the American Samoa Government, on coral restoration activities and reducing land based sources of pollution. Her favorite ocean memory occurred earlier this year, when she was able to visit “Big Momma”, one of the biggest corals in the world, located off of the island of Ta'u. On that visit, the group she was with found another, unnamed, coral which may be even larger. Not only was it was an exciting moment, it was also one of best birthday presents she has ever received!

Bert Weeks III (Hawaii - Honolulu) is originally from Oahu but left the island to pursue his Bachelor's and Master's degrees on the West Coast. Now that he's back, he will work on implementing the state's coral restoration strategy via the creation of a state-wide implementation plan, analyzing existing and novel permitting frameworks, and the exploration of sustainable financing mechanisms. Bert's favorite ocean memory was working with The Nature Conservancy on the Kohala Coast off the Big Island of Hawaii. Looking to compare resilience between reefs, he spent 24 hours conducting underwater surveys in five days, seeing the effect of a massive bleaching event firsthand.

The Fellows and Jurisdictional Supervisors (left to right): Sabrina Woofter (AS), Valentine Vaeoso (AS), David Delaney (HI), Ilan Bubb (CNMI), Sarah Fangman (FL), Zach Williams (CNMI), Victoria Barker (FL), Matt Davies (USVI), Tania Metz Estrella (PR), Caroline Pott (USVI), Justin Cruz-leduc (PR), Bert Weeks III (HI), Whitney Hoot (Guam), and Cara Lin (Guam). Photo credit: John Tomczuk (NOAA)

Fellowship Orientation Training at Nova Southeastern University

February 24-28, 2020


Fellows spent orientation week working with their supervisors to develop their scopes of work (photo: John Tomczuk, NOAA).

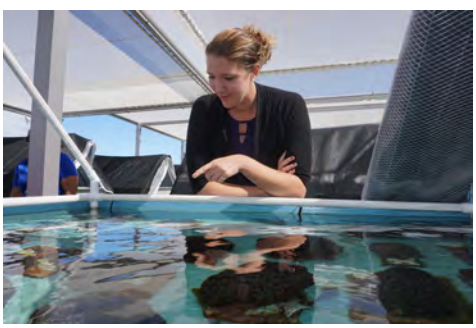
Our 2020-2022 cohort of Fellows gathered at Nova Southeastern University's Halmos College of Natural Sciences and Oceanography in Dania Beach, Florida this February. The Fellows, along with their supervisors and regional Points of Contact, met to introduce themselves, develop work plans, and learn about the challenges and issues facing each of the jurisdictions.

The week-long orientation began with a day of facilitation training for the supervisors and Fellows, led by Melissa Ladd of NOAA's Office for Coastal Management, During the next three days, each jurisdictional group participated in a series of exercises to explore work styles, personality types, and develop work plans for the two years of their Fellowship. These work plans focus on the Fellow's overarching goals, specific projects, and metrics for judging progress and success.

The final day of orientation was dedicated to stony coral tissue loss disease, a devastating coral disease that was first discovered in Florida in 2014 but has since spread across the northern Caribbean. The Fellows were able to tour the NSU Intermediate Coral Holding facility, where researchers are holding healthy corals that have been removed from reefs prior to the disease, in an effort to retain their genetic diversity. These corals will eventually be sent to an Association of Zoos and Aquariums partner for long term holding and be used as broodstock for future restoration efforts.

NSU coral researcher Dr. Brian Walker shared his intervention efforts with the group and explained the difficulty in treating a disease with an unknown pathogen. NSU scientist Dr. Joana Figueiredo presented information on restoration modeling efforts, highlighting areas that serve as coral larvae sinks and sources, which will doubtless prove an invaluable tool for selecting future restoration sites. Finally, Florida Fellow Victoria Barker shared information on the structure of the stony coral tissue loss disease response efforts being undertaken in Florida and discussed ways this framework could be adapted to other jurisdictions.





Fellows were able to tour the NSU Coral Rescue facilities and Dr. Joana Figueiredo's Marine Larval Ecology and Recruitment Laboratory (photos: Bert Weeks III).

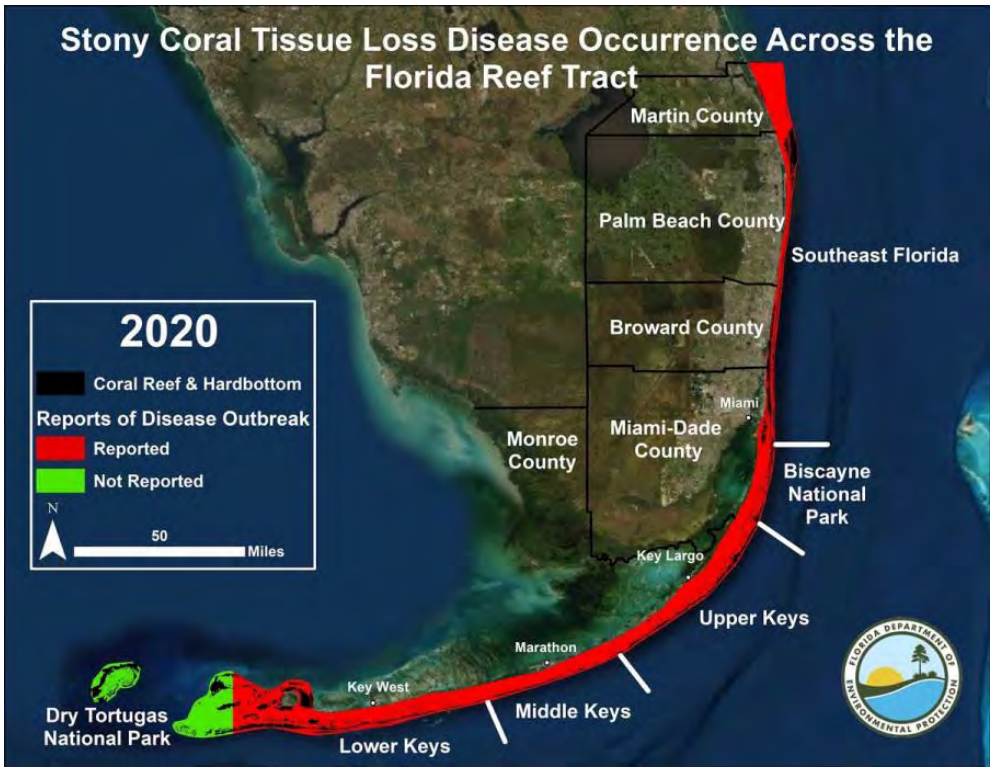
Fellows' Focus: Stony Coral Tissue Loss Disease (SCTLD)

As the Fellows settle into their new roles, they are beginning to recognize common themes and challenges to coral resource management as well as the unique management responses in each of the jurisdictions. In this issue, the focus is on the Stony Coral Tissue Loss Disease outbreak currently impacting Florida and the Caribbean jurisdictions. Please note, all opinions shared in this newsletter are that of the Fellow and do not necessarily reflect the positions held by any related supervisor, agency, or funding source.

Below, Victoria Barker (Florida), Matt Davies (USVI), and Justin Cruz-leduc (Puerto Rico) discuss their jurisdictions' response to the disease outbreak and how their roles contribute to effective management.

How has your jurisdiction responded to the Stony Coral Tissue Loss Disease outbreak?

Victoria (FL): SCTLD is one of the major impacts affecting Florida's coral reefs. The disease was first spotted off the coast of Miami in 2014 and has since spread north to Martin County and south past Key West, encompassing nearly the entire Florida Reef Tract. While disease is a natural part of any ecosystem, SCTLD is unique in its extended duration, high mortality rate, and large number of species impacted. Therefore, the state has launched a massive response effort including over 60 partner organizations from federal, state, and local government agencies, academic institutions, non-governmental organizations, and zoos and aquariums across the country. The response includes nine teams, which focus on such broad topics as research and epidemiology, reconnaissance and intervention, coral rescue, and communications and outreach. My major role as the Florida Coral Reef Management Fellow is to assist in coordinating these teams into a unified response, ensuring that they have the direction and resources they need to move our understanding of the disease outbreak forward. More information related to Florida's SCTLD response efforts can be found at: https://floridadep.gov/rcp/coral/content/stony-coral-tissue-loss-disease-response.



This image and additional information about the Florida SCTLD response can be found the Florida Department of Environmental Protection and Florida Keys National Marine Sanctuary websites.

Matt (USVI): Following the outbreak of the disease in January 2019, the Virgin Islands Coral Disease Advisory Committee (VI-CDAC) was formed to coordinate the territory's response. Its efforts have focused on research, monitoring, interventions, and community outreach and education. On each island, SCTLD Strike Teams formed of staff and volunteers from numerous organizations are at the forefront of disease monitoring and intervention.

At the University of the Virgin Islands, researchers have been collaborating with stateside institutions to understand the epidemiology of the disease, including pathogen identification and the efficacy of intervention treatments. Additionally, in collaboration with The Nature Conservancy, they seek to identify restoration methods that will increase reef resilience to STCLD.

Stony Coral Tissue Loss Disease lesion progression is extremely fast and almost always fatal, necessitating a widespread and rapid response effort. This boulder brain coral (C. natans) in the USVI experienced nearly 100% mortality in less than two months (photo: Sonora Meiling, UVI).

Justin (PR): In November 2019, coral colonies with symptoms similar to those of the SCTLD were reported near the Tamarindo Chico area off Culebra, Puerto Rico. Even before this report, local managers and scientists had been participating in regional exchanges to learn more about this new disease and potential treatments, in order to organize the local response. These exchanges included participating in conference calls with experts and managers from Florida and USVI, as well as participating in the Disease Outbreak Response Workshop hosted by the University of the Virgin Islands.

Once suspicious colonies were identified, the Department of Natural and Environmental Resources of Puerto Rico (DNER) authorized local collaboration with *Sociedad Ambiente Marino* (Society of Marine Environment) to treat coral colonies using amoxicillin mixed into a specially formulated paste. This treatment has been successfully applied in other jurisdictions.

DNER organizes monthly conference calls with representatives from the federal, state, and private sector to discuss the situation and the logistics of the response. DNER plans to continue organizing roving diver surveys of other areas with a high abundance of susceptible coral species, as well as the treatment trials and monitoring of those areas where colonies with SCTLD symptoms have been identified.

Examples of Stony Coral Tissue Loss Lesions on wild coral colonies (photos: Left: FDEP, Middle and Right, Brian Walker, NSU).

How does your Fellowship work plan relate to the Stony Coral Tissue Loss Disease Response?

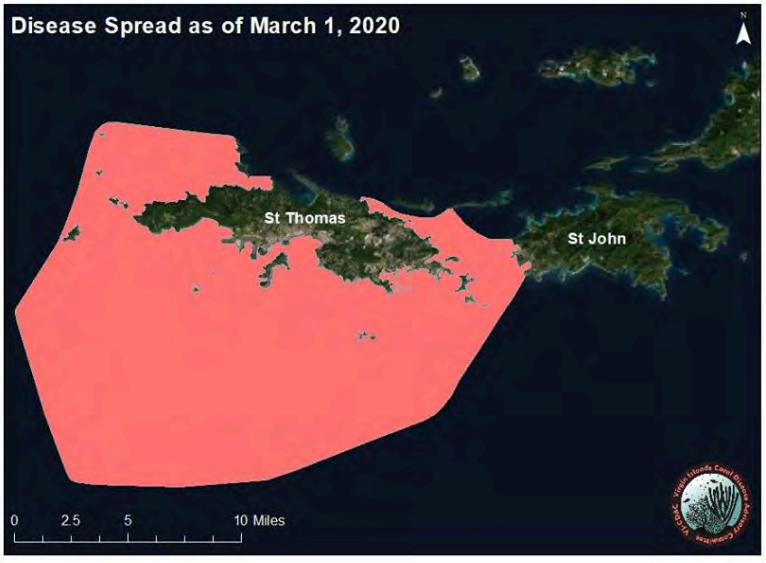
Victoria (FL): My Fellowship work plan in almost entirely dedicated to coordinating the disease response efforts here in Florida. I work closely with the Florida Coral Disease Coordinator (previous Florida Fellow Maurizio Martinelli) to coordinate the efforts of the nine response teams. I also facilitate bi-weekly Disease Advisory Committee calls, which serve as a cross-cutting forum for broad topics such as research needs. I serve as a conduit between our leadership bodies, the Executive Coordination Team and the Steering Committee, and the nine response teams, encouraging open communication between the various organizations and ensuring that the response moves forward as a unified effort. Given the large number of people and partner organizations involved in the Florida response, my days are always full of new challenges!

Matt (USVI): Part of my work plan involves coordinating the activities of the St. Croix Strike Team. The St. Croix Strike Team currently has 18 divers who have been trained in the identification of SCTLD, many of whom received training in intervention methods at a workshop on St. Thomas in November 2019, which were then shared with the rest of the team. As SCTLD has not yet reached St. Croix, we aim to conduct reconnaissance surveys at least once per week so that we can rapidly detect and respond to its arrival. Additionally, we have all the supplies necessary for intervention ready to go, if and when the disease arrives. As coordinator, I organize the weekly surveys, review and manage the data, ensure teams have the necessary supplies, and recruit and train new volunteers. I also keep up to date on territory-wide activities and liaise with the VI-CDAC through weekly conference calls.

Justin (PR): My Fellowship work plan is connected to Stony Coral Tissue Loss Disease Response in many ways. The core of my project is focused on general coral disease, this entails a lot of SCTLD related projects and opportunities. Some of these projects include organizing and mapping SCTLD related photos, including sightings reported by scientists and community members, orientating and supporting local scientists and volunteers with information about permits procedures and protocols, partaking in group call meeting with other jurisdiction about their current efforts in combating SCTLD, and assisting with the overall logistics when managing SCTLD related problems.

How does this fellowship encourage you to be a mechanism of change?

Victoria (FL): I have been working as the Florida Fellow since May 2019, when the previous Fellow was hired as the Florida Coral Disease Coordinator. As such, I have had ample opportunities to see how this Fellowship truly encourages, inspires, and supports Fellows on their professional journey and within the coral reef conservation realm. I am regularly involved in management-level decision making regarding important coral reef projects in South Florida. This includes evaluating disease intervention options, contributing to coral and ecosystem restoration projects, and prioritizing various research and epidemiology needs.



Map of SCTLD spread within the US Virgin Islands as of March 2020. Produced by Ashley Ruffo (NOAA)

Matt (USVI): I am a firm believer in a holistic approach to conservation. Governmental policy, conservation non governmental organizations, education/outreach, and community-driven projects all have an important role in marine conservation, but will not achieve their full potential in isolation. The effectiveness of each depends on collaborative efforts to fulfill a common goal. As my Fellowship has multiple focuses, working closely with each sector across different projects, I am able to put this philosophy into practice. This, I hope, will enable me to be an effective agent of change.

Justin (PR): Now, more than ever, we live in a time where the choices we make could change and influence the future of coral reef management. My work as a fellow aim to collect information on the regional distribution of coral diseases to contribute to the understanding of coral disease prevalence in Puerto Rico. Abreast information on the local abundance and distribution of diseases is critical for understanding how current coral reef management practices and human impacts affect the spread and the severity of diseases. By doing this, I hope to add fundamental information that can produce change in the ongoing problem of disease in Puerto Rico and the Caribbean.

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With proper management, coral reefs can thrive, like this one in Ofu, American Samoa. photos: Valentine Vaeoso (CRAG)

The National Coral Reef Management Fellowship was established in 2003 to respond to the need for additional coral reef management capacity in the U.S. coral reef jurisdictions in the Pacific and Atlantic/Caribbean. The fellowship is a partnership between the National Oceanic and Atmospheric Administration's Coral Reef Conservation Program, the U.S. Department of Interior's Office of Insular Affairs, the U.S. All Islands Coral Reef Committee and the Nova Southeastern University's Halmos College of Natural Sciences and Oceanography. The program's vision is a thriving collaborative fellowship program that builds excellent next generation leaders and capacity for effective local coral reef ecosystem management.